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Thaller

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[54] **ELECTRICALLY RECHARGEABLE REDOX FLOW CELL**

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[52] **U.S. Cl.** **320/2;** 429/23; 429/34

[51] **Int. Cl.²** **H01M 10/44;** H01M 10/00

[58] **Field of Search** ..... 136/86 A, 86 R, 164, 136/3, 6 R

[56] **References Cited**

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[57] **ABSTRACT**

There is disclosed a bulk energy storage system including an electrically rechargeable reduction-oxidation (REDOX) cell divided into two compartments by a membrane, each compartment containing an electrode. An anode fluid is directed through the first compartment at the same time that a cathode fluid is directed through the second compartment, thereby causing the electrode in the first compartment to have a negative potential while the electrode in the second compartment has a positive potential. The electrodes are inert with respect to the anode and cathode fluids used and the membrane is substantially impermeable to all except select ions of both the anode and cathode fluid, whether the cell is fully charged or in a state of discharge.

Means are provided for circulating the anode and cathode fluids and the electrodes are connected to an intermittent or non-continuous electrical source, which when operating, supplies current to a load as well as to the cell to recharge it. Ancillary circuitry is provided for disconnecting the intermittent source from the cell at prescribed times and for circulating the anode and cathode fluids according to desired parameters and conditions.

11 Claims, 3 Drawing Figures